KSC Integration Office Internship

Final Report

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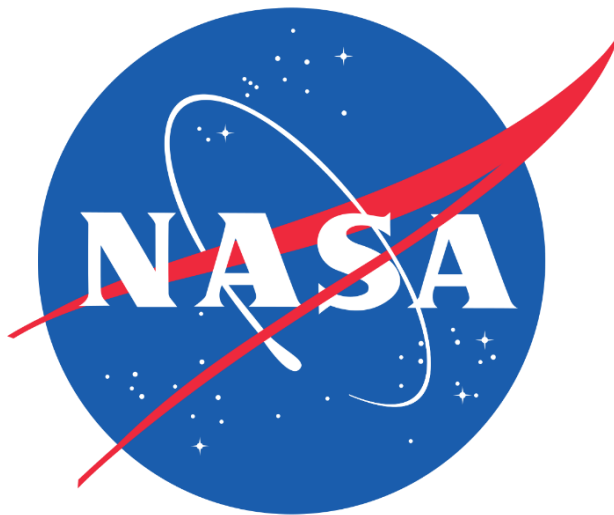Major: Electrical Engineering

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Directorate: Center Director

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Abstract

This report is a summary of the projects I undertook during this internship period. The objective and scope of each project are be described in detail, and a description of the procedures utilized to work on said projects are provided. The current standing and future work that needs to be done are also discussed for each respective project. Finally, to show the personal growth achieved during this period, a brief overview of other activities undertaken is provided, as well as a summary of important skills gained throughout this internship.

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I. Introduction

As an intern at the KSC Integration Office, my job was to support the members of the Business Management System. One-on-one time was taken with each member of the team, obtaining an overview of the office's core functionality. Two main projects were tackled during this internship period; the first of which focused around Documentation and Records Management. For this project I continued the implementation of a process which has been worked on by many generations of interns. This process has finally reached its final stages and will greatly improve the way records are managed by making them digital and thus improving their availability, security, and increasing the options available for managing them properly. Due to the success of the procedure on the initial records, I also began the initial stages of implementation with a higher ranking selection of records.

The secondary project that was one focused on Web Development, specifically, the updating of the Business World (BW) website. Business World is an online page where the Integration Office provides access to valuable information on the procedures and instructions that define how work is to be done on-center to the KSC workforce. This project mainly focused on the upkeep of the site, with a few improvements implemented as well after discussions were held with the members of the Integration Office.

II.   Record Management

a) Task Description

In an tempt to increase documentation management efficiency, and support the efforts of moving KSC Headquarters operations into a new building, known as Central Campus, it was decided that moving all records into a digital format was the best course of action for KSC. Throughout the last two years, interns have been working on the design of a process which can make the transition into digital documentation as simple and user friendly as possible, and its implementation with a fairly large group of documents. Specifically the signed original records of Kennedy Documented Procedures (KDPs) and Kennedy Technical Instructions (KTIs) belonging to all organizations. This with the hopes that implementation can later be done on a larger scale throughout the Center.

The work I have performed during my internship was among the final steps needed for implementation to be complete. My work ensures that all necessary documentation to validate the authenticity of a document is accounted for in our files. Any anomalies or missing documentation is reported and handled accordingly so that optimal conditions may be achieved when it is time to upload all records into a secure database where only people with proper security clearance will have access to modify them in any way.

I also had the opportunity of beginning the initial stages of this project with another set of documents, specifically Board and Committee records. Most of the work with these records consisted of scanning the signed, original documents and properly labeling and organizing them in designated folders within a Shared drive the office uses to keep the documents as they are validated and prepared for upload.

b) Process Followed

After taking the necessary training to be able to work on with the database management tool used by KSC, Tech-Doc, I met with the Business System Documentation Manager (BSDM) and the Continual Improvement Specialist (CIS) so we could discuss the ideal way to tackle the final stages of the project. The procedure used (presented in Fig. 1) is the result of the work of previous interns and of the aforementioned meeting.

Preliminary Update → Report to BSDM → Reply Report from BSDM → Final Update → Bulk Upload

Figure 1.   **Preparation for Bulk Upload of Records**

In the Preliminary Update stage, the documents of a particular organization (kept in the Shared Drive) are cross-referenced with a Master Sheet, which has a log of the documents processed by past interns. There is also cross-referencing with the documents under the organization's Tech-Doc database. Things like the publication date and revision are taken into account when determining if the documents present in the Shared Drive are acceptable records for the revision of the document currently in use. To assist in managing the progress of this project, the File Transfer Workbook (FTW) was created. The FTW is an Excel spreadsheet used to keep track of the current standing of each organization through the Bulk Upload process (Seen in Table 1). For clarification on the codes used to identify each organization, refer to Appendix A.

Table 1.   Status of the File Transfer Workbook as of 4/3/19

Organization	Master Sheet Preliminary Update	Email Report Sent to BSDM	Email Report Responce from BSDM	Master Sheet Final Update	File Upload
AA	Leave Alone	Leave Alone	Leave Alone	Leave Alone	Leave Alone
AD	19-02-07	19-02-07	19-02-08	19-02-08	Prepared for Upload
AJ	19-02-07	19-02-07	Work In Progress	To-do	To-do
BA	19-02-08	19-02-11	Work In Progress	To-do	To-do
CC	19-02-11	19-02-12	Work In Progress	To-do	To-do
FA	Leave Alone	Leave Alone	Leave Alone	Leave Alone	Leave Alone
GG	19-02-14	19-02-19	Work In Progress	To-do	To-do
GP	19-02-19	19-02-19	Work In Progress	To-do	To-do
IT	19-02-21	19-02-21	Work In Progress	To-do	To-do
LX	Leave Alone	Leave Alone	Leave Alone	Leave Alone	Leave Alone
NE	19-03-14	19-03-21	Work In Progress	To-do	To-do
OP	19-02-22	19-02-22	Work In Progress	To-do	To-do
PX	19-02-26	19-02-28	Work In Progress	To-do	To-do
SA	19-03-04	19-03-05	Work In Progress	To-do	To-do
SI	Work In Progress (90)	To-do	To-do	To-do	To-do
UB	19-02-28	19-02-28	Work In Progress	To-do	To-do
VA	Leave Alone	Leave Alone	Leave Alone	Leave Alone	Leave Alone

The next step is sending an email report to the BSDM. This report is filled in with information of any anomalies in the documents present, as well as notes on all documents missing for the organization in question. The report follows a specific format that allows for the BSDM to write out his input and return it with detailed instructions on how to address each issue. For troublesome cases in which records require additional input from the owners of the document, the BSDM or CIS may contact the document owner directly so that all issues may be solved as quickly and cleanly as possible.

Once a reply has been received from the BSDM, a final update process can begin, where inputs presented in the reply are used to update the organization's Master Sheet accordingly. In special cases, excerpts from the reply may be attached to certain documents, adding evidence of the decisions taken to the record. Once the final update of content has been completed, the organization can be identified as "Prepared for Upload" in the File Transfer Workbook (An Excel spreadsheet used to keep track of the current standing of each organization through the Bulk Upload process.)

c) Achievements and Future Work

As of the writing of this report, almost all organizations have been put through the Preliminary Update stage, the only exception being SI which is currently being worked on and approximately 60% completed. All organizations (again, with the exception of SI) have also completed the Report stage and are prepared to initiate work on their Final Updates as soon as the BSDM is able to reply to the reports that have been sent. Only the AD organization has made it all the way to the "Prepared for Upload" stage, as it was the organization used to design the procedure. Due to time constraints caused by the need of the BDSM to work on more critical projects, as well as by the physical move of the office over to Central Campus, it is unclear if the final stage (the bulk upload of all signed records) will be done during this internship or by a future Integration Office intern.

Regardless, the project has moved forward smoothly and it shows great promise for being implemented to other records. As a part of the move into Central Campus, the digitization project has also begun implementation into the records kept by the KSC Directives Manager. Results thus far have been positive, which serves as further proof of the great improvement that this project brings to the management of records and similar documentation.

III. Website Development

a) Task Description

This task was on a much smaller scale since one of the past interns made it her main focus and revamped the entire BW Webpage. It was my job to maintain their hard work and make sure to catch any details that might have previously gone un-noticed due to the vast amount of information that was worked with during the restructuration of the page. The work mainly consisted of verifying all the hyperlinks in the page and taking the proper steps to fix any outdated or broken links. A few improvements to the webpage were also discussed, however, the implementation of other projects has taken precedence so working on the improvements will likely be worked on by a following intern.

b) Process Followed

After attending the required training for Sitecore, the web development tool used by KSC to manage its web pages, I decided the best way to detect any issues with the page would be through the interface which users regularly interacted with. The first step taken was to use the "Inspect Element" tool to verify each link. After inspecting the links, they were tested by attempting to access them. This way a pattern was found in the structure of outdated links, though there weren't many faulty links, those that were faulty were typically links to documents in Tech-Doc that lead to an outdated revision of the document in question. Using a Hyperlink tool developed by one of the members of the office, a link was generated which automatically looked for the latest revision of the documents. Once all links with this problem were found, the BW webpage was accessed from an editor standpoint using Sitecore and the hyperlinks were updated easily.

There were also a few hyperlinks leading to web pages that no longer exist, these were either updated to lead to a new website that held the intended information or completely eliminated from the page. This step was done hand-in-hand with the lead editor of the BW webpage to make sure all links and pages used matched his requirements and portrayed the desired information in an acceptable way.

c) Achievements and Future Work

All the updates to the content and hyperlinks in the BW webpage had satisfactory results. All hyperlinks involving a document will now always default to leading the person to the latest available revision of that document. Due to the excellent work of past interns, future work should be fairly simple to handle:

- A verification of this kind should only be needed every few months to deal with any documents that may have been canceled.
- A meeting should also be held periodically so that all the members of the office can see the content being presented and decide if they wish to improve any features of the page since it is a very valuable source of information for NASA employees.

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IV.   Job Shadowing Opportunities

Another highlight of being an intern in an agency as prestigious as NASA is the opportunity to work alongside people with a great deal of experience in diverse areas of interest. The following tables contains the names of some of the great professionals I had the pleasure of working with every day. The information of my office colleagues is shown in Table 2) and a few that allowed me to shadow them at their jobs outside my usual work environment (visible in table 3).

Table 2.   Members of the Integration Office Worked with Daily

Office Member	Position	E-mail
Felix Soto	KSC Audit Liaison Representative	felix.a.soto-toro@nasa.gov
Eduardo Lopez del Castillo	KSC Business System Documentation Manager	eduardo.lopezdelcastillo-1@nasa.gov
Rey Diaz	KSC Business System Manager	rey.n.diaz@nasa.gov
Neil Berger	Business Process Modeling Manager	neil.berger@nasa.gov
Lori Ray	Lead Internal Auditor	lori.ray@nasa.gov
Donna Lozaw	Directives Manager	donna.m.lozaw@nasa.gov
Edward Bollenback	Opportunity for Improvement Manager	edward.bollenback-1@nasa.gov

Table 3.   Employees Shadowed Outside of Daily Work Environment

Employee Shadowed	Position	E-mail
Mark Ruether	KSC Integration Office Chief	mark.k.ruether@nasa.gov
Rene Formoso	ISRU CO_2 Collection Subsystem PM/Lead	rene.formoso@nasa.gov
Reza Fotros	EDL Lab Manager	reza.m.fotros@nasa.gov

V.　Conclusion

　　In summary, work in the integration office has been a defining experience in my professional career. It provided incredibly valuable insight into areas that I commonly overlooked before this experience. After working on these projects, I have developed a great deal of respect and understanding for the importance of a strong management system, and improved my ability to adapt to unexpected situations in a way that takes into a count the entirety of the project at hand. This internship provided knowledge and skills that will help define how I handle future working environments and projects of any nature.

VI.   Appendix A

[1]Organization Codes:

- AA – Center Director
- AD – Center Planning and Development Directorate
- AJ – Office of Diversity and Equal Opportunity
- BA – Human Resources Office
- CC – Chief Counsel
- FA – Commercial Crew Program
- GG – Chief Financial Officer
- IT – Information Technology & Communications Services Directorate
- LX – Exploration Ground Systems Program
- NE – Engineering
- OP – Procurement Office
- PX – Communication and Public Engagement Directorate
- SA – Safety and Mission Assurance
- SI – Spaceport Integration & Services Directorate
- UB – Exploration Research and Technology Programs
- VA – Launch Services Program Office

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VII.   References

[1]Kennedy Space Center. "NASA KSC Executive Team" Kennedy Communicator [Online Document], URL: https://ba.ksc.nasa.gov/ba/home/extmtext

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